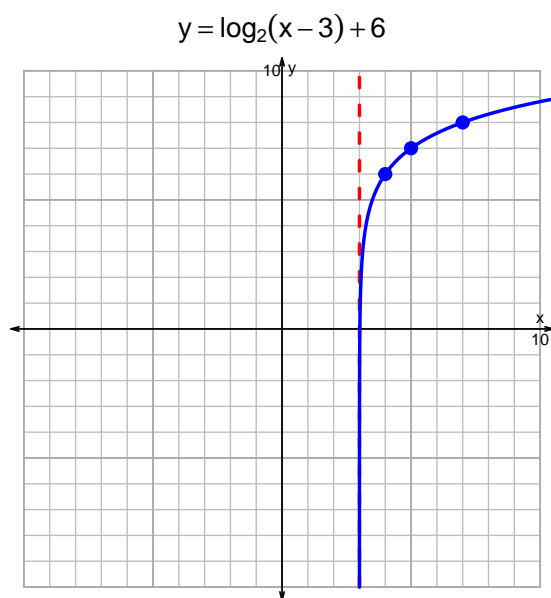
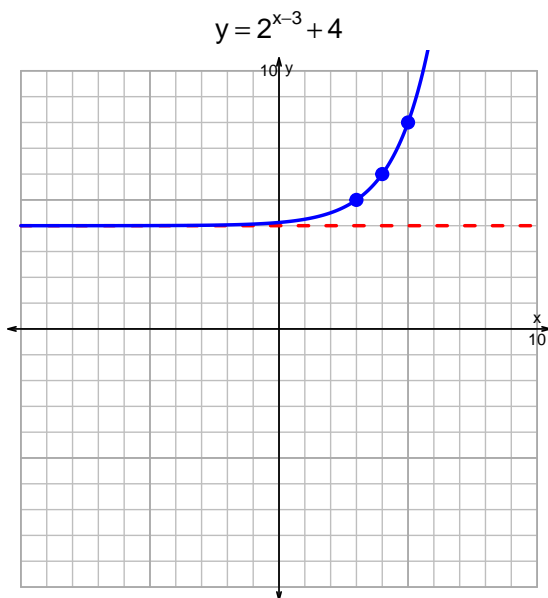


Name: \_\_\_\_\_

Date: \_\_\_\_\_

s18QUIZ: EXP LOG (SOLUTION v109)

1. Graph  $y = 2^{x-3} + 4$  and  $y = \log_2(x - 3) + 6$  on the grids below. Also, draw any asymptotes with dotted lines.



2. Write (but do not evaluate) the solution to the equation below by writing a logarithmic expression.

$$29 = \left(\frac{7}{4}\right) \cdot 2^{-3t/5}$$

Divide both sides by  $\frac{7}{4}$ .

$$\frac{29 \cdot 4}{7} = 2^{-3t/5}$$

Take log, base 2, of both sides.

$$\log_2 \left( \frac{29 \cdot 4}{7} \right) = \frac{-3t}{5}$$

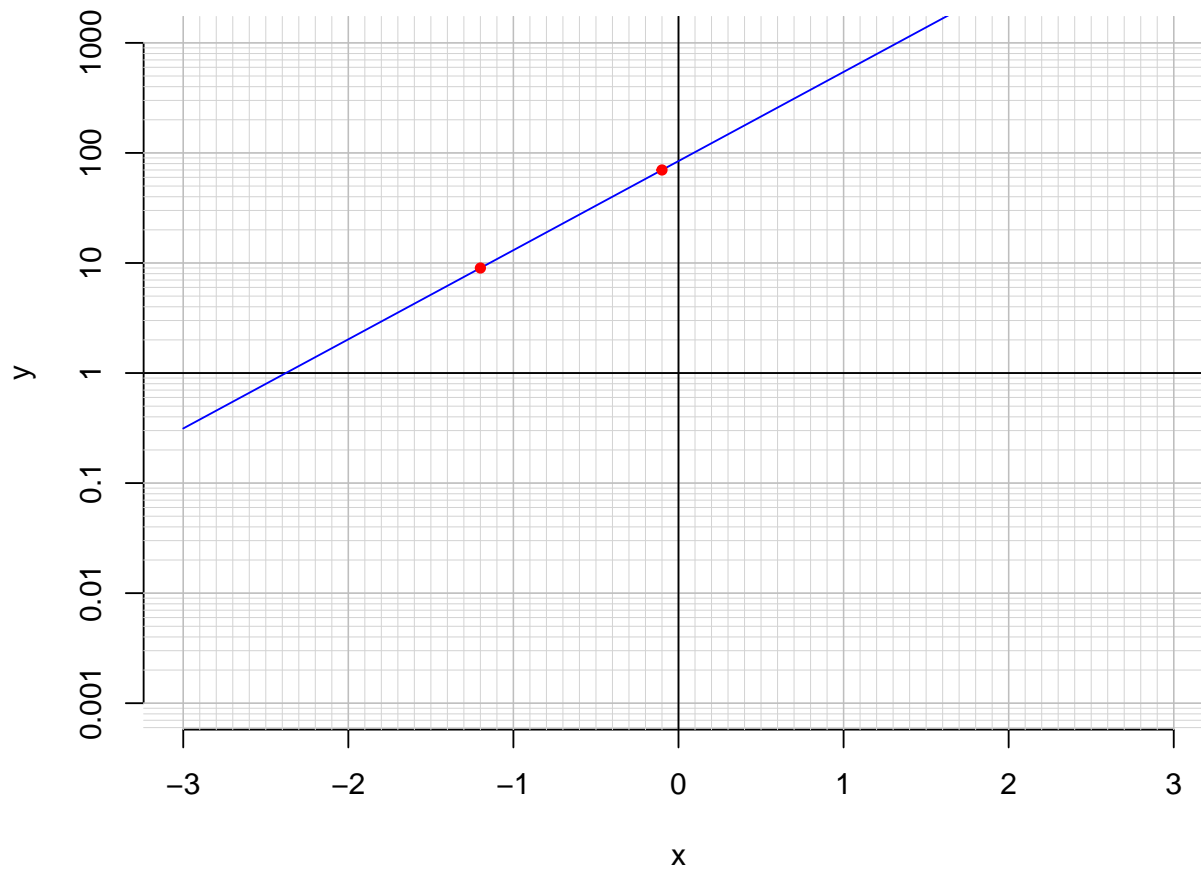
Divide both sides by  $\frac{-3}{5}$ .

$$\frac{-5}{3} \cdot \log_2 \left( \frac{29 \cdot 4}{7} \right) = t$$

Switch sides.

$$t = \frac{-5}{3} \cdot \log_2 \left( \frac{29 \cdot 4}{7} \right)$$

3. An exponential function  $f(x) = 84.3 \cdot e^{1.86x}$  is graphed below on a semi-log plot.



- a. Using the plot above, evaluate  $f(-0.1)$ .

$$f(-0.1) = 70$$

- b. Express  $f^{-1}(x)$ , the inverse of  $f$ .

$$f^{-1}(x) = \frac{1}{1.86} \cdot \ln\left(\frac{x}{84.3}\right)$$

- c. Using the plot above, evaluate  $f^{-1}(9)$ .

$$f^{-1}(9) = -1.2$$